
22. (New) A network interface card configured to perform the following:

provide task offload capabilities of the network interface card to an operating system;

enable selected task offload capabilities, from among the provided task offload capabilities, to an extent they are needed for one or more data packets; and

selectively and dynamically receive a data packet from the operating system that indicates that the network interface card, rather than the operating system, is to perform an operating task that would otherwise be performed by the operating system.

23. (New) The network interface card as recited in claim 22, wherein the network interface card is configured to provide task offload capabilities of the network interface card by being configured to provide the location of a task offload buffer to the operating system.

24. (New) The network interface card as recited in claim 22, wherein the network interface card is configured to provide task offload capabilities of the network interface card by being configured to provide task offload capabilities that are stored in a task offload buffer.

25. (New) The network interface card as recited in claim 22, wherein the network interface card is configured to enable selected task offload capabilities by being configured to set at least one flag indicator in a task offload buffer associated with the network interface card.

26. (New) The network interface card as recited in claim 22, wherein the network interface card is configured to enable selected task offload capabilities by being configured to process selection data received from the operating system.

27. (New) The network interface card as recited in claim 22, wherein the network interface card is configured to selectively and dynamically receive a data packet from the operating system that indicates the network interface card is to perform an operating task by being configured to receive a network data packet that is transferred across a layered network model.

B¹ 28. (New) The network interface card as recited in claim 27, wherein the network interface card is configured to receive a network data packet that is transferred across a layered network model by being configured to receive a network data packet that includes network data and packet extension data.

29. (New) The network interface card as recited in claim 28, wherein the network interface card is configured to receive a network data packet that includes network data and packet extension data by being configured to receive a network data packet with packet extension data that includes at least one data field indicative of at least one operating task to be performed by the network interface card.

30. (New) The network interface card as recited in claim 22, wherein the network interface card is configured to selectively and dynamically receive a data packet from the operating system that indicates the network interface card is to perform an operating task by being configured to perform an operating task that includes one or more of a checksum operation; an encryption operation; a message digest calculation operation; a TCP segmentation operation; a UDP segmentation operation; a decryption operation; a TCP packet assembly operation; a UDP packet assembly operation; a packet classification operation; and a Denial of Service filter operation.

31. (New) The network interface card as recited in claim 22, wherein the network interface card is configured to selectively and dynamically receive a data packet from the operating system that indicates the network interface card is to perform an operating task by being configured to selectively and dynamically receive a data packet from the operating system that indicates the network interface card is to perform a batch of operating tasks.

32. (New) A network interface card configured to perform the following:

provide task offload capabilities of the network interface card to a software component;

receive selection data from the software component;

based on the received selection data, enable selected task offload capabilities, from among the provided task offload capabilities, to an extent they are needed for one or more data packets;

selectively and dynamically receive requests to perform operating tasks that are offloaded from an operating system, requests being received within data packets that indicate the network interface card is to perform the operating task; and

perform offloaded operating tasks at the network interface card.

33. (New) A network interface card configured to perform the following:

provide task offload capabilities of the network interface card to a device driver associated with the network interface card;

receive data from the device driver that enables selected task offload capabilities to an extent they are needed for one or more data packets;

selectively and dynamically receive a data packet from the device driver that indicates that the network interface card, rather than the operating system, is to perform an operating task that would otherwise be performed by the operating system; and

perform the operating task at the network interface card.

34. In a network interface card, a method for dynamically performing, based on the current needs of a computer system, operating tasks that are offloaded from an operating system to the network interface card on a per-packet basis, thereby freeing up host processor resources and increasing the overall efficiency of the computer system, the method comprising the following:

an act of providing task offload capabilities of the network interface card to the operating system;

an act of selection data received from the operating system causing selected task offload capabilities, from among the provided task offload capabilities, to be enabled to an extent they are needed for one or more data packets; and

in the event that an operating task, to be otherwise performed for a data packet by the operating system, corresponds to an enabled task offload capability of the network interface card, and depending on the then current needs of the computer system, an act of a selectively and dynamically receiving a request from the operating system that the network interface card, rather than the operating system, perform the operating task, the request being received within a data packet from the operating system that indicates that the network interface card is to perform the operating task.

35. (New) The method as recited in claim 34, wherein the act of providing task offload capabilities of the network interface card to the operating system, comprises the following:

an act of providing the location of a task offload buffer to the operating system.

36. (New) The method as recited in claim 35, wherein the act of providing the location of a task offload buffer to the operating system, comprises the following:

an act of providing the location of a task offload buffer that identifies the task offload capabilities supported by the network interface card.

37. (New) The method as recited in claim 34, wherein the act of selection data received from the operating system causing selected task offload capabilities to be enabled comprises the following:

an act of selection data causing at least one flag indicator to be set in a task offload buffer associated with the network interface card.

38. (New) The method as recited in claim 34, wherein the act of the network interface card receiving a selective and dynamic request that the network interface card perform the operating task, by receiving a data packet from the operating system comprises the following:

an act of the network interface card receiving a network data packet that is transferred across a layered network model.

39. (New) The method as recited in claim 38, wherein the act of the network interface card receiving a network data packet that is transferred across a layered network model comprises the following:

an act of receiving a network data packet that includes network data and packet extension data.

40. (New) The method as recited in claim 39, wherein the act an act of receiving a network data packet that includes network data and packet extension data comprises the following:

an act of receiving a network data packet, wherein the packet extension data includes at least a data field indicative of at least one operating task to be performed by the network interface card.

B1
41. The method as recited in claim 34, wherein the operating task includes one or more of a checksum operation; an encryption operation; a message digest calculation operation; a TCP segmentation operation; a UDP segmentation operation; a decryption operation; a TCP packet assembly operation; a UDP packet assembly operation; a packet classification operation; and a Denial of Service filter operation.

42. In a network interface card, a method for dynamically performing, based on the current needs of a computer system, operating tasks that are offloaded from an operating system to the network interface card on a per-packet basis, thereby freeing up host processor resources and increasing the overall efficiency of the computer system, the method comprising the following:

a step for allocating operating tasks that may be performed on data packets at the network interface card;

in the event that an operating task, to be otherwise performed for a data packet by the operating system, corresponds to an enabled task offload capability of the network interface card, and depending on the then current needs of the computer system, an act of a selectively and dynamically receiving a request from the operating system that the network interface card, rather than the operating system, perform the operating task, the request being received within a data packet from the operating system that indicates that the network interface card is to perform the operating task.
